

# **Urban & Community Forestry: *Green Trees For The Golden State* Grant Program**

*A tree planting grant program.*

**2011/2012**

## **Request for Proposals**



**State of California  
Department of Forestry and Fire Protection  
(CAL FIRE)  
Urban & Community Forestry Program**



Grant program made Pursuant to the California Urban Forestry Act of 1978 (Public Resources Code 4799.06 – 4799.12), a copy of which can be found at: [http://www.fire.ca.gov/resource\\_mgt/resource\\_mgt\\_urbanforestry.php](http://www.fire.ca.gov/resource_mgt/resource_mgt_urbanforestry.php).

Grant Funds made available from:

Proposition 40, *California Clean Water, Clean Air, Safe Neighborhood, Parks, and Coastal Protection Act of 2002*

Proposition 84, *Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006*

## **Urban & Community Forestry: *Green Trees For The Golden State* 2011-2012**

### **IMPORTANT NOTE:**

*Please also see and refer to the Urban & Community Forestry Grant Programs Procedural Guide for 2011/2012. This document is available at:*

<http://www.ufe.org/grantinfo.lasso>

or

[http://www.fire.ca.gov/resource\\_mgt/resource\\_mgt\\_urbanforestry.php](http://www.fire.ca.gov/resource_mgt/resource_mgt_urbanforestry.php).

*Grant applicants are responsible to meet the requirements of both documents. This RFP document takes precedence in the case of a conflict between the two documents.*

### **Introduction:**

The California Department of Forestry and Fire Protection (*CAL FIRE*) will set aside funds to provide grants to organizations that wish to create or implement an urban tree planting project. The funding level of each *CAL FIRE* Urban & Community Forestry grant program may be adjusted based on the applications received and funds available to *CAL FIRE* for these purposes.

The *CAL FIRE* Urban & Community Forestry Program works to optimize the benefits of trees and related vegetation through multiple-objective projects that provide environmental services and cost-effective solutions to the needs of urban communities and local agencies, including, but not limited to, increased water supply, clean air and water, reduced energy use, flood and storm water management, recreation, urban revitalization, improved public health, and producing useful products such as biofuel, clean energy, and high quality wood. Such efforts play a significant role in meeting the state's greenhouse gas emission reduction targets. We encourage citizen participation in the development and implementation of state and local agency and non-profit organization urban forestry programs and projects.

Eligible applicants include cities, counties, qualifying districts, or nonprofit organizations qualified under Section 501(c)(3) of the Internal Revenue Code (PRC 5096.605). Districts include, but are not limited to, school, park, recreation, water, and local taxing districts.

### **Purpose:**

The purpose of the *Green Trees for the Golden State* grant program is to provide funding for tree planting projects in urban areas and up to two years of initial maintenance. Preference will be given to tree planting projects that provide multiple benefits, with an emphasis on greater air quality benefits and greater energy conservation benefits. Additional benefits that may be taken into consideration include: storm water runoff reduction, storm water quality improvement, improvement of public health, creation of "green jobs", social benefits, and environmental justice.

## Conditions:

All of the following conditions must be met for a proposed project to be eligible for a grant:

- Grant requests must be for the creation, development, and implementation of tree planting projects that maintain and/or expand healthy urban forests.
- The amount requested must be between \$30,000 and \$100,000. (There is a separate program, “*Leafing Out*”, for all Urban & Community Forestry Grant Projects of \$2,500 - \$30,000).
- The project must be located in, or immediately adjacent to, an “urban area” or “urban cluster” as defined by the U.S. Census Bureau.  
(<http://www.census.gov/geo/www/ua/2010urbanruralclass.html>)
- The project must have a commitment for active participation from one or more of the following: local residents, local business, local nonprofit group or local government.
- The project must display a sign with the logos and names of all organizations participating in the project, including *CAL FIRE Urban & Community Forestry Program*. The sign must also cite the funding proposition.
- The applicant has complied (and will comply) in all respects with all applicable local and county ordinances, and all applicable state and federal laws and regulations, including the California Environmental Quality Act (CEQA).
- Projects shall include an educational component. Not more than 10% of grant funds may be used for this educational component. The educational component as part of the overall project can be shown as project match dollars by the applicant.
- Any trees paid for as part of the project must be alive and healthy upon project completion or they will need to be replaced at the grantee's expense.
- The applicant must agree to provide maintenance on all trees planted (including replacement) for at least three years after project completion. Evidence of long term care for the trees must also be shown.
- **The project shall adhere to the *CAL FIRE Standards and Specifications For Purchasing, Planting, and Maintaining Trees*, see ATTACHMENT A (and as listed at the following web site: <http://www.ufe.org/Standards&Specs.html>).**

## Ineligible Projects:

The following practices will not be funded by this grant program.

- Planting trees that require excessive maintenance such as: excessive long-term watering, fertilizing, exterminating, or controlling plant pests and diseases in order to survive.
- Projects that plant trees that will eventually conflict with overhead or underground utilities or ground-located infrastructure.
- Invasive species as determined by referencing the California Invasive Plant Council website (<http://www.cal-ipc.org/>) or similar reference.

## **Eligible Costs (refer to sample budget, Procedural Guide APPENDIX B):**

### **Trees and planting materials**

- Trees in the #15 (gallon) container size are eligible. Other sizes will be considered on a case-by-case basis. Balled and burlapped and bare root trees may also be utilized if the sizes are equivalent (refer to specifications document). Other sizes and types of trees must be approved by a *CAL FIRE* Regional Urban Forester prior to submission of the final proposal.
- Planting materials may be: Stakes, ties, and root collar protectors proportional to number of trees being planted; wood chip surface mulch to conserve soil moisture and inhibit weed growth, soil amendments in areas of hard clay soil or sandy soil; soil where needed to complete backfill; watering tools, including minor irrigation system supplies; and hand tools.
- Limited labor directed to tree planting.
- Young tree maintenance costs such as: structural pruning, stake adjustment and removal, and irrigation.
- **Administration and overhead costs (for non-profit applicants only):**
  - A maximum not to exceed 5% of total State reimbursement. Administrative costs include items such as payroll administration, human resources, computer support, financing, and office support.
- **Education and signage:**
  - Purchase, development and distribution of project-specific education materials may be funded pending relevance to the scope of the proposed project. A maximum not to exceed 10% of grant request.
  - Propositions 40 and/or 84 sign construction and materials. Cost to State not to exceed \$1,000.00.
  - For sign requirement details, please contact your Regional Urban Forester (see Procedural Guide APPENDIX E).
- **Concrete removal and other special concerns:**

In projects where the planting of trees involves the removal of asphalt, concrete paving, or another special concern, reimbursement cost may be available. Applicant must demonstrate that no alternative exists to plant trees in another nearby location(s) that may be more suitable, or that there is an overwhelming need at the location. If concrete cuts are to be made, they must be 16 square feet at minimum. Larger is preferred.

### **Ineligible Costs:**

This grant cannot finance any undertaking or complete any practice designed to supplant rather than supplement existing local agency activities. Such ineligible practices shall consist of any request that *CAL FIRE* furnish grants to take the place of a regular or ongoing fiscal commitment to a program or project by a local government. Any practices that are required as mitigation of any kind may not be financed by this grant program. Additionally, the following are ineligible costs:

- Tree grates and decorative tree guards
- Disposal costs of woody debris
- Tree removal
- Irrigation valves, pumps, sprinkler control timers or elaborate irrigation systems
- Root barriers (linear and chemical barriers may be approved for use by a *CAL FIRE* Regional Urban Forester prior to final proposal submission, but will not be paid for with grant funds).

### Cost share:

These grants are to share the cost of eligible urban forestry projects. The proportion of the project's cost funded by *CAL FIRE* Urban & Community Forestry shall not be greater than **75%**. Matching contributions (**25%**) required as a condition of grants made pursuant to this section may be made in the form of material, services, or equipment, as well as funds from any non-state source. For example:

Total Project = \$133,333.33  
*CAL FIRE* Maximum Request = \$100,000.00  
 Minimum match required = \$33,333.33

***Important Note:*** *Disadvantaged or severely disadvantaged communities as defined in the Urban Forestry Act are eligible to have increased cost share of up to 90% of project costs with a 10% matching contribution in the form of material, services, equipment, or funds from any non-state source. Such communities must be able to prove they meet this criteria. Please see Procedural Guide for further details.*

### Application:

The first step is to complete a Concept Proposal Application. If your Concept Proposal Application is selected, you will be asked to complete a Full Proposal. The Concept Proposal Application can be found at:

<http://www.ufe.org/grantinfo.lasso> or  
[http://www.fire.ca.gov/resource\\_mgt/resource\\_mgt\\_urbanforestry.php](http://www.fire.ca.gov/resource_mgt/resource_mgt_urbanforestry.php)

**Concept proposals must be submitted electronically in the provided format by September 23, 2011. Email or electronic submissions other than in the provided format will not be accepted unless alternative arrangements are made with Urban & Community Forestry Program staff ahead of the deadline. Do not send unsolicited materials. Doing so will result in rejection of the application. In the case of technical difficulties or an inability to utilize the online format, please contact your *CAL FIRE* Regional Urban Forester for authorization to use alternative grant submittal procedures at least two weeks prior to the due date (see Procedural Guide APPENDIX E).**

Using the submit button at the end of the form field will submit the concept application electronically. Before clicking to submit your concept application, please print a copy

for your records and go to the file menu in your current version of Adobe Acrobat Reader (<http://get.adobe.com/reader/>) and select the “save a copy” option. This will allow applicants to retain a copy of the application for their records.

### **Information required on concept application shall include:**

Complete the online application and follow the format, directions about size limitations etc. Failure to fully complete the form will result in rejection of the application.

The project description should include a description of the project, the number and job nature of the people involved in the project and the source of funds, materials, equipment or services to be provided by the applicant. Also include the number of trees to be planted within the project. Provide your proposed budget following the format provided in the concept proposal form.

### **Desirable Concept Proposal Attributes**

- The project provides urban forest resources to areas where such resources are absent, or replenishes such resources where they are badly depleted.
- The project uses trees or other vegetation to reduce consumption of finite energy resources, reduce urban heat island effects, or to produce energy and other products from urban forests.
- The project uses trees or other vegetation to help reduce air pollution or improve air quality.
- The project is located in an area with an unemployment rate in the relevant census tract that exceeds the average unemployment rate for urban areas in California and provides jobs for currently unemployed persons. Documentation will be required for full proposal if successful in the concept proposal process.
- The project has an educational component and develops public awareness of the need for expanding and managing urban forest resources.
- The number of trees to be planted is high in relation to the budget requested.
- The project utilizes the largest canopied tree possible for the selected planting sites and shows a preference for planting sites that can support large canopied trees.
- The project involves the public in planting of trees.
- The project will be in a disadvantaged community or a severely disadvantaged community as defined in the Urban Forestry Act. Severely disadvantaged or disadvantaged status instructions can be found in: *Urban & Community Forestry Grant Programs Procedural Guide for 2011/2012*.

### **Project Rating Criteria:**

Any conditions, attributes, or requirements of this RFP and the accompanying Procedural Guidelines document may be utilized for rating purposes.

- 1. Best Management Practices**
  - Project maximizes the multiple benefits of urban trees.
  - Project follows urban forestry and nursery stock best management practices.

- Project is consistent with local ordinances, policies, and management plans.
- Project has adequate planting sites for tree species selected.
- Project shows a preference for tree species that will grow large at maturity (30+ feet tall with equal spread at maturity).
- Project adequately takes species diversity of the urban forest into account.
- Project uses climatically well-adapted, non-invasive tree species for the proposed project area.
- Project takes site related challenges into consideration (soil, vandalism, pollution, etc.).

## **2. Program Priorities (Must meet one or more)**

- Interagency Cooperation and Integration (partnerships)
- Maximizes public participation/involvement.
- Project is proposed by a Severely Disadvantaged or Disadvantaged Community.
- Project is ready to move forward immediately.
- Applying organization has adequate capacity to carry out the project.
- Application quality (thoroughness, clarity, focus, accuracy).

*Note: In addition to the above criteria, application completeness, degree of community need, project value and project reflection of Urban Forestry Act goals and values will be evaluated.*

### **Project Timeline:**

Projects Completed By March 30, 2014

Projects Closed By June 1, 2014

No Reimbursement Possible After this date

*Note: Please see [Urban & Community Forestry Grant Programs Procedural Guide for 2011/2012](#) for reporting requirements for this grant program.*

### **What happens after submitting an application?**

(Please see APPENDIX F of the *Urban & Community Forestry Grant Programs Procedural Guide for 2011/2012* for a CAL FIRE Urban & Community Forestry Program Grant Process Flow Chart).

### **Application Review and Filing**

Upon receipt of an application for an urban forestry project grant, *CAL FIRE* Urban &

Community Forestry staff or a designee of the *CAL FIRE* Urban & Community Forestry Program Manager shall review it for conformance with the California Urban Forestry Act of 1978 (Public Resource Code 4799.06 to 4799.12), The California Code of Regulations (Title 14, Division 1.5, Chapter 9.7), this Request For Proposals, and the *Urban & Community Forestry Grant Programs Procedural Guide*. Such review may include an inspection of the project area, if applicable.

If the application is found incomplete in a material way or the proposed project is not eligible for a grant, the applicant will be informed that the proposed project is ineligible. Only when an application is complete and the project is deemed eligible for a grant, will *CAL FIRE* Urban & Community Forestry staff file the application.

### **Notification of Application Status**

*CAL FIRE* Urban & Community Forestry staff shall notify each applicant whose application has been filed and reviewed of the status of its application within ten working days of the completion of review.

(1) For those applications that have ranked high enough in the initial review, *CAL FIRE* shall notify the applicant and invite them to submit a full proposal for a grant for the project. Invitation for a full proposal is NOT a guarantee of funding. Once a full proposal is submitted, *CAL FIRE* Urban & Community Forestry staff will notify the applicant if a grant will be awarded as the circumstances allow. The applicant may then either withdraw their application or complete the negotiations and execute a grant agreement. When the grant agreement is executed, the Director of *CAL FIRE* will make the grant funds available to the recipient in the manner and at the times specified in the agreement. DO NOT BEGIN WORK ON A PROJECT PRIOR TO RECEIVING A FULLY EXECUTED GRANT AGREEMENT. Doing so may result in the project being ineligible for reimbursement.

(2) For those applications that are eligible but for which there are no existing funds due to ranking, *CAL FIRE*, shall notify the applicant that they will be invited to submit a full proposal if funds become available during the fiscal year. If no funds become available during the fiscal year, *CAL FIRE* shall notify the applicant of this and shall encourage him/her to apply for funds during the next period in which *CAL FIRE* requests proposals for urban & community forestry projects.

Administration: To receive a grant, successful applicants must enter into a grant agreement with *CAL FIRE*. Grant recipients must agree to complete their project and allow for periodic inspections. In return, *CAL FIRE* agrees to share the cost of the project.

Technical Assistance: For technical assistance in preparing the concept proposal, the applicant should contact the *CAL FIRE* Regional Urban Forester located in the area nearest to the proposed project (see Procedural Guide APPENDIX E):



Request for Record Review.

Within ten days of the receipt of notice that the application has been denied the applicant may request that the Director of **CAL FIRE** personally reconsider the decision of rejection. The request shall identify the applicant and the proposed project, and shall briefly state the applicant's reasons for requesting reconsideration. The Director shall consider the application and all of the correspondence from interested parties in reviewing the decision.

Final Decision by the Director.

If the Director finds that the decision to reject the application conforms to these guidelines and the Act, the Director shall uphold the decision. If the Director finds that the decision to reject the application does not conform to these guidelines or the Act, the Director may approve the application.

**ATTACHMENT A**  
**California Department of Forestry and Fire Protection (*CAL FIRE*)**  
**Guideline Specifications for Nursery Tree Quality**  
(Prepared by Brian Kempf, Urban Tree Foundation)



Revision 2009

## BACKGROUND

This document is a revision of a previous publication entitled Guideline Specifications for Nursery Tree Quality, published by the Urban Tree Foundation, which was developed by a committee of horticulture professionals from the nursery, landscape, municipal, consulting, and academic sectors. The original publication has been posted online at the Foundation's Web site (<http://www.urbantree.org/specs.asp>) since 2002 and has been used by public, private, and nonprofit groups to select and specify quality nursery trees. Recommendations for improvements to the document received in the past 5 years have been incorporated in this 2009 revision.

The following people worked on the original Guideline Specifications for Nursery Tree Quality:

David Burger, UC Davis Department of Plant Sciences  
Barrie Coate, Consulting Arborist, Los Gatos  
Larry Costello, UC Cooperative Extension, Half Moon Bay  
Robert Crudup, Valley Crest Tree Company, Sunol  
Jim Geiger, US Forest Service, Pacific South West Region  
Bruce Hagen, California Department of Forestry and Fire Protection, Santa Rosa, Retired  
Richard Harris, Professor Emeritus, UC Davis Department of Plant Sciences  
Brian Kempf, Urban Tree Foundation, Visalia  
Jerry Koch, City of Berkeley Division of Urban Forestry, Retired  
Bob Ludekens, L. E. Cooke Company, Visalia  
Greg McPherson, US Forest Service, PSW Research Station, Center for Urban Forest Research  
Martha Ozonoff, California ReLeaf, Davis  
Ed Perry, UC Cooperative Extension, Stanislaus County  
Markio Robert, Caltrans LDA Maintenance Division, Oakland

Illustrations by Edward F. Gilman, Professor, Environmental Horticulture Department, IFAS, University of Florida. Adaptions from Arboriculture: Integrated Management of Landscape Trees, Shrubs and Vines, 4th ed., by R. W. Harris, J. R. Clark, and N. P. Matheny (Prentice Hall, 2003).

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## Introduction

This document provides specifications for selecting and specifying quality nursery trees in California, with a focus on container stock. Key traits of nursery trees are identified and described to provide growers and buyers with the information they need to distinguish good-quality stock from poor-quality stock. Structural and health characteristics are described, as well as labeling, compliance with laws and regulations, and inspection of nursery stock. If a particular defect or substandard element can be corrected easily, appropriate remedies should be applied as agreed upon by both parties.

### I. GENERAL SPECIFICATIONS

**A. Proper Identification:** All trees shall be true to name as ordered or shown on planting plans and shall be labeled individually or in groups by species and cultivar (as appropriate).

**B. Compliance:** All trees shall comply with federal and state laws and regulations requiring inspection for plant disease, pests, and weeds. Inspection certificates required by law shall accompany each shipment of plants. Clearance from the local county agricultural commissioner, if required, shall be obtained before planting trees originating outside the county in which they are to be planted. Even though trees may conform to county, state, and federal laws, the buyer may impose additional requirements.

**C. Inspection:** The buyer reserves the right to reject trees that do not meet specifications as set forth in these guidelines or as adopted by the buyer. If a particular defect or substandard element can be corrected easily, appropriate remedies shall be applied. If destructive inspection of a root ball is to be done, the buyer and seller should have a prior agreement as to the time and place of inspection, number of trees to be inspected, and financial responsibility for the inspected trees.

**D. Delivery:** The buyer shall stipulate how many days prior to delivery that delivery notification is needed. Buyer shall stipulate any special considerations to the nursery prior to shipment.

### II. HEALTH AND STRUCTURE SPECIFICATIONS

These specifications apply to deciduous, broadleaf evergreen, and coniferous species. They do not apply to palms. Note that leaf characteristics will not be evident on deciduous trees during the dormant season.

#### A. Tree Health

**1. Crown:** The form and density of the crown shall be typical for a young specimen of the species or cultivar. Changes in form caused by wind, pruning practices, pests, or other factors shall not substantially alter the form for the species or cultivar.

**2. Leaves:** The size, color, and appearance of leaves shall be typical for the time of year and stage of growth of the species or cultivar. Trees shall not show signs of prolonged moisture stress as indicated by wilted, shriveled, or dead leaves.

**3. Branches:** Shoot growth (length and diameter) throughout the crown should be appropriate for the age and size of the species or cultivar. Trees shall not have dead, diseased, broken, distorted, or otherwise injured branches.

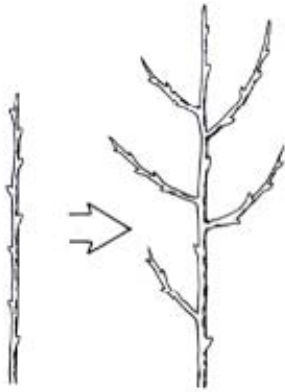
**4. Trunk:** The tree trunk shall be relatively straight, vertical, and free of wounds (except properly made pruning cuts), sunburned areas, conks (fungal fruiting bodies), wood cracks, bleeding areas, signs of boring insects, galls, cankers, girdling ties, or lesions (mechanical injury).

**5. Roots:** The root system shall be substantially free of injury from biotic (e.g., insects and pathogens) and abiotic (e.g., herbicide toxicity and salt injury) agents. Root distribution shall be uniform throughout the container substrate, and growth shall be appropriate for the species or cultivar. At time of inspection and delivery, the root ball shall be moist throughout. Roots shall not show signs of excess soil moisture conditions as indicated by stunted, discolored, distorted, or dead roots.

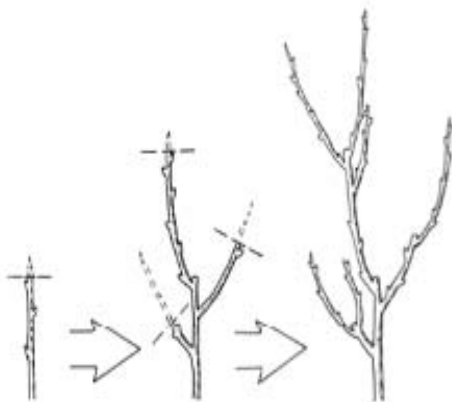
## B. Tree Crown

Note: Crown specifications do not apply to plants that have been specifically trained in the nursery as topiary, espalier, multi-stem, clump, or unique selections such as contorted or weeping cultivars.

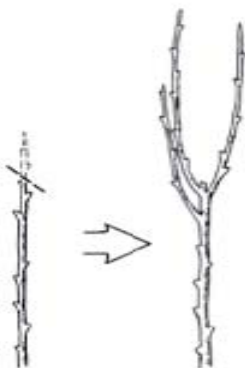
1. Trees shall have a single, relatively straight central leader. They shall be free of co-dominant stems and vigorous, upright branches that compete with the central leader. If the original leader has been headed, a new leader at least one-half of the diameter of the original leader shall be present.



Not topping is desirable.

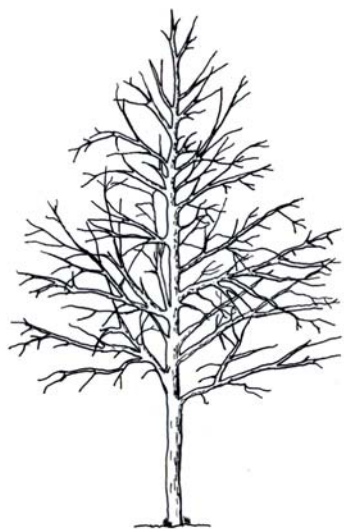


Topping and retaining a leader is desirable.



Topping without retaining a leader is not desirable.

2. Main branches shall be well distributed along the central leader not clustered together. They shall form a balanced crown appropriate for the cultivar/species.



Desirable



Not Desirable



3. Branch diameter shall be no larger than two-thirds (one-half is preferred) the diameter of the central leader measured 1 inch above the branch.



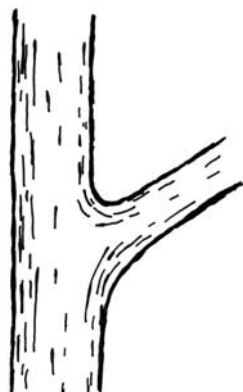
Desirable



Not Desirable



4. The attachment of the largest branches (scaffold branches) shall be free of included bark.



Desirable



Not Desirable

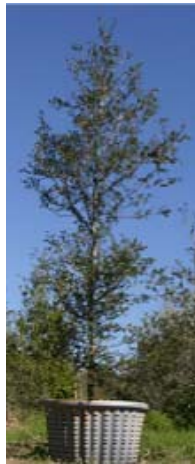




5. Temporary branches, unless otherwise specified, should be present along the lower trunk below the lowest main (scaffold) branch, particularly for trees less than 1 inch in caliper. These branches should be no greater than 3/8 inch diameter. Clear trunk should be no more than 40% of the total height of the tree.



Desirable



Not Desirable



### C. Trunk

1. The trunk shall be free of wounds (except properly-made pruning cuts), sunburned areas, conks (fungal fruiting-bodies), wood cracks, bleeding areas, signs of boring insects, galls, cankers and/or lesions.

2. Trunk caliper and taper shall be sufficient so that the tree will remain vertical without a stake. Trunk caliper at 6 inches above the soil media (substrate) surface shall be within the diameter range shown for each container size below:

Container Size -----Trunk Diameter

# 5.....0.5" to 0.75"

# 15.....0.75" to 1.5"

24-inch box.....1.5" to 2.5"



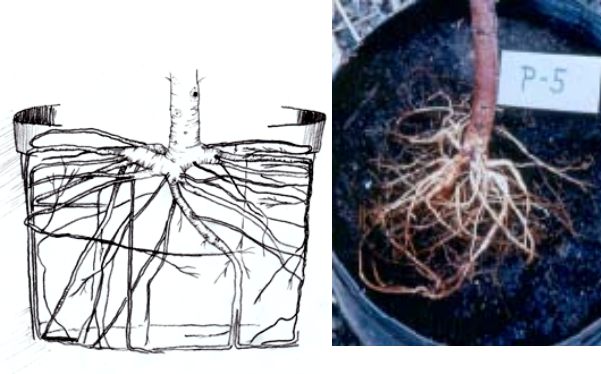
Desirable



Not Desirable

#### **D. Roots**

1. The uppermost roots or root collar (root crown) shall be within the upper 2 inches of the soil media (substrate).
2. The root collar and the inside portion of the root ball shall be free of defects, including circling, kinked, and stem girdling roots. Soil removal near the root collar may be necessary to inspect the aforementioned root defects.



Desirable



Not Desirable

3. Roots on the periphery and bottom of the root ball shall be less than 1/4 inch in diameter (1/8 inch is preferred). The maximum acceptable root diameter on the periphery should be indicated.



Desirable



Not Desirable

4. The tree shall be well rooted in the soil media (substrate). Root distribution shall be uniform throughout the container media. Structure and growth shall be appropriate for the species/cultivar. When the container is removed, the root ball shall remain intact. When the trunk is lifted both the trunk and root system shall move as one.
5. At the time of inspection and delivery, the root ball shall be moist throughout. The crown shall show no signs of moisture stress as indicated by wilted, shriveled, or dead leaves or branch dieback. The roots shall show no signs of excess soil moisture as indicated by poor root growth, root discoloration, distortion, death, or foul odor.

#### **III. INSPECTION**

The buyer reserves the right to reject trees that do not meet specifications as set forth in these guidelines or as adopted by the buyer. If a particular defect or substandard element or characteristic can be easily corrected, appropriate remedies are encouraged. If destructive inspection of a root ball or balls is to be done, the buyer and seller should have a prior agreement as to the time and place of inspection, minimum number of trees to be inspected or percentage of a species or cultivar, and financial responsibility for the inspected trees.

#### **VI. DELIVERY**

The buyer should stipulate how many days prior to delivery that notification is needed.



## GLOSSARY:

**caliper.** Trunk diameter measured 6 inches from the ground; if caliper is greater than 4 inches, the caliper measurement is taken at 12 inches from the ground.

**central leader.** A continuation of the main trunk located more or less in the center of the crown, beginning at the lowest main branch (scaffold) and extending to the top of the tree. Also referred to as the **dominant leader**.

**circling roots.** One or more roots whose diameter is greater than 10% of the trunk caliper circling more than one-third of the trunk.

**clear trunk.** The portion of the trunk below the crown lacking lateral branches; this includes the portion of the trunk with shortened temporary branches that are below the main crown.

**co-dominant.** Two or more vigorous, upright branches or stems of relatively equal size that originate from a common point, usually where the leader was lost or removed.

**crown.** The portion of a tree beginning at the lowest main (scaffold) branch extending to the top of the tree.

**cultivar.** A named plant selection from which identical or nearly identical plants can be produced, usually by vegetative propagation or cloning.

**included bark.** Bark embedded in the union between a branch and the trunk or between two or more stems that prevents the formation of a normal branch bark ridge.

**kinked root.** A main mother root that is sharply bent.

**leader.** The dominant stem that usually develops into the main trunk.

**photosynthate.** Sugar and other carbohydrates that are produced by the foliage and stems during photosynthesis.

**root collar.** The base of a tree where the main roots and trunk meet. Also referred to as the **root flare**.

**scaffold branches.** Large main branches that form the main structure of the crown.

**stem-girdling root.** A circling, bent, or straight root that touches or rests on the trunk or root flare that can become a permanent root.

**temporary branch.** A small branch that is temporarily retained along the lower trunk of young trees.

**trunk.** The main stem of a tree, beginning at the root collar and ending at the lowest main scaffold branch.

**taper.** The thickening of a trunk or branch toward its base.